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BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 35506

WESTERN COAL TRAFFIC LEAGUE – PETITION FOR DECLARATORY ORDER

OPENING EVIDENCE AND ARGUMENT OF
CONSUMERS UNITED FOR RAIL EQUITY

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October 28, 2011

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Consumers United for Rail Equity ("CURE") hereby submits its opening evidence and argument in response to the Petition for Declaratory Order filed herein by Western Coal Traffic League ("WCTL") and the Board's Decision and Order served September 28, 2011.

Interests of CURE and Its Members

CURE is an incorporated, non-profit advocacy group that works for federal policy that addresses the concerns of rail-dependent shippers. CURE is sustained financially by the annual dues and contributions of its members, who are individual rail-dependent rail customers, their representatives and trade associations. Included in CURE are electric utilities that generate electricity from coal, chemical companies, forest and paper companies, cement companies, agricultural entities, various manufacturers and national associations, including both trade associations and associations of governmental institutions whose members work to protect consumers.

The issues presented in this proceeding potentially affect numerous rail-dependent shippers. We understand that the Annual "R-1" report of BNSF Railway Company ("BNSF") for 2010 includes a massive write-up of the values of BNSF's tangible assets of at least $7.625 billion, which reflects a portion of the acquisition premium paid for BNSF by Berkshire Hathaway, Inc. ("Berkshire Hathaway"), that BNSF seeks to include in its rate base. If BNSF has its way, this write-up would be included in the Board's costing systems that are used to develop BNSF service costs, determine the extent of the Board's jurisdiction over BNSF's rates, establish maximum rates for some captive shippers, and determine revenue adequacy.

The Board's ruling on these issues could affect the number of captive rail rates that are subject to its jurisdiction, the Uniform Rail Costing System ("URCS") costs of BNSF it determines to be appropriate for regulatory purposes, the methodology through which it determines railroad revenue adequacy, and, ultimately, permissible levels of differential pricing.

Introduction and Summary of Position

Against the backdrop of shipper concerns that have evolved and grown, particularly since the creation of the eastern and western rail duopolies, the BNSF acquisition premium raises a fundamental question regarding the regulation of U.S. railroads: Can the payment of a premium by a sophisticated investor to acquire a major and robust railroad enable the railroad to extract increased economic rent from its captive shippers?[1] Even before the parties have begun to present evidence, eleven United States Senators have written the Board urging it to take appropriate action to address this matter.

In this proceeding, WCTL sought a declaratory order from the STB that BNSF's URCS costs for 2010 shall not be adjusted in any amount for the acquisition premium (calculated by WCTL to be $7.625 billion) paid by Berkshire Hathaway in 2010 for all shares of BNSF that it did not already own.

[1] BNSF has admitted that the stroke of a pen has created an opportunity for BNSF prospectively to loosen regulatory constraints on the rates it charges to at least one major captive shipper and to cause other shippers to lose regulatory oversight of rates for their traffic. See BNSF News Release, "Impact of Purchase Accounting Valuation on BNSF's Customers is Very Limited" (June 10, 2011) ("BNSF June 10 News Release") at http://www.bnsf.com/media/news-releases/2011/june/2011-06-10a.html .

CURE believes it is critical that the STB not permit any write-up in BNSF's URCS variable costs that are used to determine the Board's 180 percent-of-variable-cost "jurisdictional threshold" under 49 U.S.C § 10707(d)(1)(A), which defines the Board's jurisdiction over railroad rates. Many rail rates over 180 percent of variable costs, but not necessarily a great deal over 180 percent of variable costs, would be moved below the Board's jurisdictional threshold if part of the acquisition premium paid by Berkshire Hathaway for BNSF were used to increase BNSF's URCS variable costs.[2] If the Board were to countenance this, it would effectively allow the regulated entity – BNSF – to deregulate a substantial portion of its previously regulated traffic. Ironically, the higher the level of the premium that is deemed to have been paid for the assets, the more traffic effectively would be deregulated, and the more that same traffic would be vulnerable to substantial rate increases that the Board would be powerless to prevent. Congress simply could not have intended to allow the proverbial "fox to guard the chicken coop" by determining its own variable costs, and thereby determine the jurisdictional threshold or floor on the Board's regulatory authority over that railroad's rates.

Moreover, we fear that what BNSF is really engaged in here is an attempt to turn "cost-based" ratemaking into "deal-based" ratemaking that will further bolster the coffers of Berkshire and Berkshire's shareholders at the expense of the public and with at least a portion of those new rate increases occurring beyond the jurisdiction of the Board. While merger and acquisition premiums are precluded by general rule from being included in the

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[2] For example, a rate of $18.00/ton, for a movement with variable costs of $10.00/ton, has an R/VC (revenue to variable cost ratio) of 180 percent. Any increase in that rate would trigger the STB's jurisdiction. However, if BNSF's variable costs are treated as though they were increased by the acquisition premium, say to $12.00/ton for the same movement, the R/VC ratio would now be 150 percent ($18.00/12.00), and BNSF would be free to raise that rate by up to 20 percent, $21.60/ton (because $21.60 divided by $12.00 is 180 percent), before the rate is subject to review by the Board.

rate base in other regulated industries as a means of consumer protection,[3] the write-ups advanced by BNSF clearly would broaden BNSF's ability to engage in differential pricing, imposing unwarranted burdens on consumers. BNSF is the largest railroad in the Nation by volume, with its network covering the entire western two-thirds of the United States. Therefore, many of the industries and companies CURE represents would be impacted by this premium, if it is permitted to be included in the rate base. American businesses and consumers are already feeling the effects of the distressed economic environment; allowing

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[3] *See* Startrans IO LLC, 130 FERC ¶ 61,209 (2010) at 61,924 (citing FERC decisions requiring evidence of tangible, concrete and specific demonstration of benefits to customers to justify write-up of asset values due to acquisition premium); Rio Grande Pipeline Co. v. FERC, 178 F.3d 533, 541 (D.C. Cir. 199)("As noted above, normally when a facility is acquired by one regulated entity from another, the purchaser may only include the seller's depreciated original cost in its rate base, even though the price paid by the purchaser may exceed that amount."). We are not aware of any case in which FERC even considered, let alone allowed, a premium paid by an unregulated entity (such as a holding company) to be used to "write up" the costs or the investment base of the regulated entity that was acquired. FERC's policy follows the teaching of experts such as the late Professor Alfred E. Kahn and Professor Jerome E. Hass (who used to work at FERC).

Professors Kahn and Hass provided us with a Statement and Report, respectively, which explain why acquisition premiums should not be included in asset values. *See* Attachment A. In his Statement (at 3), Professor Kahn explained that acquisition premiums must not be applied to asset valuations in either the process of setting rates or determining revenue adequacy:

> "Whenever and wherever the net book value of a company's stock or assets has served as the basis for determining the permissible return for regulatory purposes – as it is in the STB's revenue adequacy calculations – it is axiomatic that those book values must be based on the original cost of the assets. As the U.S. Supreme Court has recognized, to incorporate market-value-based write-ups in the rate base to which the allowable rate of return is applied in determining a regulated company's revenue requirements or entitlements – which in turn determine its allowable prices – is to introduce a fatal circularity into the process: allowable prices are set on the basis of market value of the assets which must be based in turn on the expected prices.
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> "It would similarly eviscerate the regulatory process if the net book value that serves as the investment base in these revenue adequacy calculations were not the original cost of the assets when they were first constructed or acquired but the prices at which they were subsequently valued in or as the result of asset transfers, mergers or acquisitions. To permit rates (or calculations of revenue adequacy) to be based on the prices of those subsequent transfers would be to permit easy evasion of regulation: the assets could be transferred at prices inflated above net original cost and those inflated valuations would then automatically be translated into correspondingly inflated revenue or return targets for subsequent revenue adequacy calculations."

acquisition premiums to be included in BNSF's rate base would make the situation even worse for many captive shippers, to the detriment of the nation's economy.

The purchase of BNSF by Berkshire Hathaway, an entity that is not subject to the regulation of the Board, is unlike nearly all prior transactions in which the STB or ICC sometimes allowed the inclusion of an "acquisition premium" to inflate the rate base. In all but one of those previous proceedings, the transaction was a merger of two railroads (or acquisition by one railroad of all or a part of another railroad), and the resulting company was a railroad. In those cases, the Board or the ICC found that the inclusion of the acquisition premium was justified on the basis of expected "efficiencies" resulting from the merger or acquisition. In the case of BNSF's acquisition by Berkshire Hathaway, of course, a financial entity paid a premium to purchase BNSF "lock, stock and barrel." There were no efficiencies for rail customers that resulted from the merger of two railroad companies.[4]

WCTL has requested that the Board block BNSF from subjecting rail consumers to the asset-premium write-up of at least $7.625 billion. We fully support this request and respectfully request that the Board promptly take all appropriate actions to deny the BNSF attempts to burden consumers with any part of its acquisition premium.

BNSF replied in opposition to WCTL's Petition, but stated that, if the Board were to institute a declaratory proceeding to consider the acquisition premium issues raised by WCTL, the proceeding should also include consideration of the impact of such premiums on the revenue adequacy determinations of the STB. The STB issued a decision and order on September 28, 2011, instituting a declaratory proceeding and stating that it would consider

[4] The ICC apparently permitted write-up of C&NW's assets when it was acquired by Blackstone Group. So far as we are aware, no one objected to that action, so that transaction does not constitute precedent. In any event, the Board is not bound by the ICC's action there, if it now concludes that the action was erroneous or inappropriate.

both the URCS costing issue raised by WCTL and the "revenue adequacy" issue raised by BNSF.

CURE believes that to address effectively both issues, the overall premium paid by Berkshire Hathaway for BNSF must be viewed in two parts. The first part consists of the portion of the total premium associated with the write-up of BNSF's tangible asset values. This was the principal focus of WCTL's petition and CURE endorses fully WCTL's effort to protect the interests of captive shippers against improper effects from this portion of the overall acquisition premium. The Board clearly has authority to grant the relief requested by WCTL. Although the Board in the past has allowed write-ups of railroad assets, the Courts have held that the Board is entitled to deference on the methodology it uses for determining whether to permit write-ups (or write-downs) of railroad assets. In fact, allowing the write-ups appears to be inconsistent with at least one of the major shortcomings previously identified by the Board (and others) as a reason for rejecting the so-called "replacement cost" methodology periodically advanced by the railroads for use in revenue adequacy assessments. On this basis alone, the write-ups could and should be rejected.

Above and beyond this fatal flaw, an assortment of additional considerations weighs heavily against inclusion of the acquisition premium in BNSF's URCS costs or the Board's revenue adequacy calculations for BNSF. First and foremost, <u>BNSF did not pay the premium.</u> The methods through which the write-ups were developed do not reflect actual asset purchases by BNSF, and for several reasons should be viewed as unsuitable for these regulatory purposes.

The second part consists of the remaining portion of the total premium paid by Berkshire Hathaway for BNSF, including BNSF's intangible assets. CURE understands from

BNSF's public statements[5] that this portion of the premium does not enter the computation of BNSF's variable costs under URCS. However, CURE believes that this portion of the premium is of major importance to the Board and to captive shippers because of its implications for revenue adequacy and differential pricing. Specifically, the payment of a premium above the market value of a railroad's tangible assets provides market affirmation of the railroad's robust financial health in satisfaction of the relevant statutory criteria for revenue adequacy. Indeed, the fact that Berkshire Hathaway made a "bet on America" by buying all of BNSF at a premium is the best possible evidence of BNSF's revenue adequacy - as Berkshire Hathaway's letter to stockholders in February 2011 demonstrates – and of the need for the Board to now begin to implement in earnest more robust constraints on differential prices for at least BNSF.

Argument

THE BOARD HAS ALL NECESSARY AUTHORITY TO GRANT THE RELIEF REQUESTED BY WCTL, AND TO CONTINUE TO RELY ON BOOK VALUES.

One would think it obvious that the STB has all necessary authority to determine the appropriate methodology for determining URCS costs, what a proper URCS cost is or is not, and the proper amount to assign to railroad property or other "investments" for purposes of the Board's railroad revenue adequacy analysis. Yet, the railroads have argued in the past that the Board and its statutory predecessor, the Interstate Commerce Commission ("ICC"), is obliged to adhere to the supposed requirement of a third party, the Railroad Accounting Principles Board ("RAPB"), to allow acquisition premiums to be passed through into the investment bases of the railroads without inquiry or interference from the Board.[6] The railroads are not correct in this assertion.

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[5] See BNSF June 10 News Release at http://www.bnsf.com/media/news-releases/2011/june/2011-06-10a.html .

[6] *See, e.g.*, May 23, 2011 Reply of BNSF Railway herein (at 2-4).

The ICC itself held[7] that it is not bound by the RAPB Findings and Recommendations:

> "To conclude this discussion, it should be noted that the Commission does not, in any event, agree with the argument that the RAPB's determinations cannot be modified by the Commission. Our views on this subject were explained in Railroad Cost Recovery Procedures -- Productivity Adjustment [citing 5 ICC 2d 434, 440 (1989)]."

Moreover, Congress required that the STB "periodically review its cost accounting rules and shall make such changes in those rules as are required to achieve the regulatory purposes of this part."[8] It is, therefore, crystal-clear that the STB has the authority to revise URCS costs and its URCS costing methodology as it deems appropriate (provided, of course, that it has a rational basis for its decision).

Similarly, the Board has ample authority to determine the appropriate valuation of railroad property for purposes of the calculations used to determine if a railroad is earning adequate revenues, and regularly has affirmed the validity of reliance on depreciated book values. For example, in Standards for Railroad Revenue Adequacy, Ex Parte No. 393 (Sub-No. 1), 3 ICC 2d 261, 272 (1986), 1986 LEXIS 15, aff'd on other grounds sub nom. Conrail v. ICC, 855 F.2d 78 (3d Cir. 1988), the ICC rejected use of current or replacement costs for railroad assets.

Of particular interest in this context is the Board's decision rejecting the most recent attempt by the Association of American Railroads ("AAR") to have the Board use replacement cost, rather than historic or book value, to determine revenue adequacy or inadequacy.[9] In that decision, the Board reiterated one of the known, longstanding problems

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[7] Adoption of the Uniform Railroad Costing System as a General Purpose Costing System for All Regulatory Costing Purposes, Ex Parte No. 431 (Sub-No. 1), 5 I.C.C. 2d 894, 906 (1989), 1989 ICC LEXIS 263.

[8] 49 U.S.C. § 11161.

[9] Association of American Railroads – Petition Regarding Methodology for Determining Railroad Revenue Adequacy, Ex Parte No. 679, served Oct. 24, 2008.

of the replacement cost methodology – i.e., the need to estimate the "real" (i.e., net of expected inflation) cost of capital to avoid double-counting the effects of inflation.[10] On its face, a practice by the Board of periodically accepting rail asset values that have been written up to current market values for any costing purpose carries with it the same type of double-counting of inflation, unless a "real" cost of capital is used.

Above and beyond this fatal flaw, the fact is that the write-ups do not reflect actual asset purchases by BNSF, but rather ex post allocations made by accountants of a purchase price paid by an outside party that is not a railroad. There is no evidence that Berkshire Hathaway and BNSF even negotiated over the values of individual assets or that the values assigned by the accountants are anything other than estimates about which – if the Board had a lot of spare time on its hands - different experts reasonably could disagree. Given the incentives BNSF has to write up the asset base (as opposed to goodwill, which has no role in ratemaking), the Board would need to evaluate thoroughly the reliability of the estimates prior to their use for any regulatory purposes.

Overall, the Board has both authority and good reasons to use historic or book value for the railroads' assets in calculating URCS costs and in calculations performed in the annual revenue adequacy determinations for the Class I railroads.[11] CURE respectfully urges

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[10] A portion of the return on capital required by an investor provides protection against expected levels of inflation, while other portions of the return reflect the risk, duration and other characteristics of the investment. The cost of capital analyses performed by the Board yield "nominal" cost of capital estimates that include the inflation protection. If investors are permitted to write-up the values of existing assets to "current market" levels that incorporate the effects of inflation on the original asset, but nominal (rather than inflation-adjusted, or "real") costs of capital are used, the protection against inflation provided to investors will be redundant, and shippers will be burdened with higher regulatory costs than are needed to provide the protection against inflation legitimately required by the original investment.

[11] *See also,* Association of American Railroads v. ICC, 978 F.2d 737, 740-43 (D.C. Cir. 1992)(deferring to the ICC's determination to use the written-down values of railroad assets when they were purchased for less than book value); Coal Exporters Ass'n of the U.S. v. United States, 745 F.2d 76, 98 (D.C. Cir. 1984)(Staggers Rail Act does not require maximization of railroad revenue without regard to shippers' interests or the actual revenue

the Board to use its full authority to prevent the pass-through to BNSF's captive customers stemming from the multi-billion dollar write-up of asset values associated with Berkshire Hathaway's acquisition of BNSF in 2010.

II.

THE BOARD SHOULD VIEW THE PREMIUM PAID BY BERKSHIRE HATHAWAY FOR BNSF'S INTANGIBLE ASSETS AS A PER SE INDICATION OF REVENUE ADEQUACY, AND TAKE MEANINGFUL STEPS TO PROTECT CAPTIVE SHIPPERS FROM EXCESSIVE AND UNWARRANTED DIFFERENTIAL PRICING

CURE understands that in addition to the proposed asset write-up, the purchase price paid by Berkshire Hathaway included an even larger premium paid by Berkshire Hathaway for BNSF's intangible assets, including goodwill. Indeed, BNSF's public statements candidly acknowledge that "(t)he BNSF acquisition resulted in an unprecedented amount ($15 billion) of the purchase price being allocated to goodwill", and that this contrasts with "previous transactions in the rail industry" where the premiums paid have been related primarily or entirely to asset write-ups.[12] Despite the payment of this massive and "unprecedented" premium, in his recent 2010 Annual Report, Berkshire Chairman Warren Buffet represented that BNSF's 2010 returns were so impressive that BNSF was able to "replenish" over $22 billion in cash Berkshire paid for BNSF with the deal "increase[ing] Berkshire's 'normal'

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needs of the railroads). The controlling principles are that regulatory agencies get deference to use the most appropriate valuation methodology, provided they have a rational explanation for the methodology chosen and have adequately explained any departure from past precedent, but that they must carry out their mission to protect customers from abuses of railroad market power such as writing up assets due to acquisition or merger premiums where the customers have no say in the decision to acquire or merge or in the amount of the premium paid, and the railroad does not need to earn a return on an acquisition premium, particularly one paid by another entity.

The STB (and ICC before it) allowed write-ups of assets acquired by one railroad from another on the basis of their assumption that such transactions would improve efficiency and therefore deliver efficiency gains to the customers. That assumption has not proven to be correct, but in any event it has no application to the acquisition of a railroad by a financial holding company such as Berkshire Hathaway.

[12] See BNSF June 10 News Release at http://www.bnsf.com/media/news-releases/2011/june/2011-06-10a.html .

earning power by nearly 40% pre-tax and by well over 30% after-tax." Berkshire Hathaway, 2010 Chairman's Letter to Shareholders (Feb. 26, 2011). If Berkshire Hathaway can roll in BNSF cash even after paying a $15 billion premium for intangibles, the Board needs to accept that we have entered a new world that may require "unprecedented" changes in the Board's posture on many critical issues, especially those pertaining to captive shippers.

CURE understands from BNSF's public statements that the large premium associated with intangible assets/goodwill does not enter the computation of BNSF's variable costs under URCS, and therefore does not have the same direct impacts on captive shippers and produce cash flow for BNSF and Berkshire Hathaway as would the asset write-up. However, CURE believes that this portion of the premium is of major importance not only to captive shippers, but also to the Board's discharge of its statutory obligations, because of its implications for revenue adequacy and differential pricing.

In this section, issues related to the portion of the premium not associated with BNSF's tangible assets are discussed. First, this portion of the premium is shown to be a per se indication that BNSF has achieved revenue adequacy. Second, it is shown - pursuant to the guidance provided to the Board by the railroads' own expert witnesses in STB Docket No. EP 705 - that this portion of the premium provides a clear call for the Board to begin taking more effective and meaningful steps to rein in differential pricing. In this way, the acquisition premium paid for goodwill affects not only the captive shippers whose rates are directly influenced by the jurisdictional threshold, but also many other captive shippers whose payments of high markups have been responsible for some of the economic value reflected in the acquisition premium and who now are due meaningful relief.

Revenue Adequacy Determination

The statutory guidance regarding revenue adequacy contained in Section 10704(a)(2) states as follows:

> "The Board shall maintain and revise as necessary standards and procedures for establishing revenue levels for rail carriers providing transportation subject to its jurisdiction under this part that are adequate, under honest, economical, and efficient management, to cover total operating expenses, including depreciation and obsolescence, plus a reasonable and economic profit or return (or both) on capital employed in the business. The Board shall make an adequate and continuing effort to assist those carriers in attaining revenue levels prescribed under this paragraph. Revenue levels established under this paragraph should--
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> (A) provide a flow of net income plus depreciation adequate to support prudent capital outlays, assure the repayment of a reasonable level of debt, permit the raising of needed equity capital, and cover the effects of inflation; and
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> (B) attract and retain capital in amounts adequate to provide a sound transportation system in the United States."

In the context of this standard, the payment of an acquisition premium does not automatically connote anything in particular regarding revenue adequacy. For example, if a railroad were acquired at a small premium over its book value, and if that book value were materially lower than the market value of the railroad's assets, the railroad might only be attractive to an investor because of potential salvage opportunities. Here, however, an investor has paid a premium that covers not only the book value of all of the tangible assets needed to operate the railroad that have resulted from the railroad's capital outlays, but also the full current market value of those assets, including the effects of inflation. The premium further reflects increasing intangible assets, and was accompanied by the investor's assumption of the railroad's existing debt.

When BNSF was purchased as a going concern by a sophisticated investor at a price that covered the full market value of its tangible assets, provided a premium over the pre-existing value of its intangible assets and assumed its debt, the market signaled that the criteria itemized in Section 10704(a)(2) had been satisfied. BNSF pays its operating expenses, covers its debt, makes needed capital outlays and makes more than enough profit to sustain itself in the long term. On the basis of the criteria itemized in the statute, the premium paid by Berkshire Hathaway for goodwill demonstrates that BNSF has more than achieved revenue adequacy. Put another way, the premium paid by Berkshire Hathaway for goodwill demonstrates that an informed investor would expect to achieve more than a market rate of return if it paid the market value of all of BNSF's tangible assets to operate BNSF as a going concern, even at lower levels of differential pricing than BNSF currently achieves. In short, the premium for goodwill shows that BNSF is fully revenue adequate and already is earning supra-competitive returns.

Implications for Differential Pricing

Given this empirical demonstration that BNSF is fully revenue adequate and already is earning supra-competitive returns, the large size of the premium paid by Berkshire Hathaway above the market value of BNSF's tangible assets, and even above the market value of BNSF's stock, is of particular significance. In STB Docket No. EP 705, AAR witnesses Eakin and Meitzen of Christensen Associates reiterated an important finding from the study of railroad competition that Christensen performed for the Board – namely, that increasing traffic volumes and decreasing economies of density are **reducing** the level of differential pricing required to produce adequate revenues.[13] In the context of this finding, the acquisition premium paid by Berkshire Hathaway indicates at least three different bases from which the Board can only conclude that decisive action to rein in excessive levels of differential pricing is now appropriate.

First, as described in the preceding section, the level of differential pricing prevailing at the time of the Berkshire Hathaway transaction was already above the level needed to establish revenue adequacy under the applicable statutory criteria. Put another way, in 2010

[13] See STB Docket No. EP 705, Competition in the Railroad Industry, "Reply Comments of the Association of American Railroads" (May 27, 2011) Joint Verified Reply Statement of B. Kelly Eakin and Mark E. Meitzen at 6: "a lesser markup over marginal cost is needed to achieve sufficient revenues"; and at 10: "A key finding of our revenue sufficiency analysis is that the needed markup has declined in recent years, but the actual markup observed has not declined by as much."

BNSF captive shippers already were paying rates above those needed to ensure the financial health of the railroad.[14]

Second, the financial markets – and the Board - are well aware of forecasts that indicate railroad traffic volumes are likely to increase substantially in the future.[15] Notwithstanding all of the rhetoric the railroads have provided regarding the capital investment requirements needed to accommodate such growth, the testimony of AAR's own experts confirms that revenue adequacy can be achieved with reduced levels of differential pricing if volumes are increasing. The near-universal consensus that rail volumes will generally be increasing in the future basically requires that the Board adopt more effective measures to constrain and reduce differential pricing, at least for railroads, like BNSF, that have been demonstrated to be revenue adequate.

Finally, the price paid by Berkshire Hathaway reflects a substantial premium above the total market value of BNSF's stock. However, as discussed above, the market was already aware of railroad volume growth and other projected changes. For the payment of that premium to make any economic sense for its own shareholders, Berkshire Hathaway would have to anticipate further changes that would increase BNSF's contribution to Berkshire, prospectively including one or more of the following:

- Rail traffic increasing more than the market already expected;
- BNSF operating costs decreasing more than the market expected; and/or,

[14]This is consistent with indications from multiple sources that the Class I railroads had achieved revenue sufficiency as of approximately 2006, and had subsequently increased their earnings to supra-competitive levels that are inconsistent with the public interest and applicable economic theory. A summary discussion with relevant citations is provided at STB Docket No. EP 705, Competition in the Railroad Industry, "Statement of Arkansas Electric Cooperative Corporation Regarding Competition in the Railroad Industry" (June 10, 2011) Appendix C at 7-10.

[15] A review of specific forecasts and factors that may affect future traffic volumes is presented in Christensen Associates, "Supplemental Report to the U.S. Surface Transportation Board on Capacity and Infrastructure Investment" (March 2009).

- Rates increasing more than the market already expected.

Given the demonstrated revenue adequacy of BNSF, any or all such developments would indicate further need for Board action to curtail excessive levels of differential prices.

Conclusion

For the foregoing reasons, and those stated by WCTL in its Petition filed herein, the Board should grant the relief sought by WCTL. Specifically, the Board should ensure that the assets of BNSF are not written up to account for the premium paid for BNSF by Berkshire Hathaway, for both URCS costing purposes and for purposes of determining BNSF's revenue adequacy. Instead, it should accept the demonstration of BNSF's revenue adequacy provided by the Berkshire Hathaway transaction and take robust and decisive action to curb differential pricing excesses pursuant to the guidance provided to the Board by Christensen Associates and by AAR's own witnesses in Docket No. EP 705.

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October 28, 2011

Certificate of Service

I hereby certify that I have served, this 28th day of October, 2011, a copy of the foregoing Comments of Consumers United for Rail Equity on each person shown on the Board's official service list in this proceeding.

Robert G. Szabo

ATTACHMENT A

STATEMENT OF PROFESSOR ALFRED E. KAHN AND REPORT OF PROFESSOR JEROME E. HASS ON RAILROAD REVENUE ADEQUACY STANDARDS (FEBURARY 1997)

NATIONAL ECONOMIC
RESEARCH ASSOCIATES
[illegible]
[illegible]

STATEMENT OF PROFESSOR ALFRED E. KAHN

AND

REPORT OF PROFESSOR JEROME E. HASS

ON

RAILROAD REVENUE ADEQUACY STANDARDS

FEBRUARY 1997

STATEMENT OF PROFESSOR ALFRED E. KAHN[1] ON RAILROAD REVENUE ADEQUACY STANDARDS

The attached analysis by Professor Jerome E. Hass of the methods by which the Surface Transportation Board ("STB") determines whether individual railroads are or are not "revenue adequate" and of the results it produces demonstrate, incontestably in my view, that

- the method itself is totally discredited;
- its flaws are irremediable, and
- any attempt at this stage to devise an alternative method would not only be costly but would serve no useful purpose.

In these circumstances, it is my considered opinion that STB's entire exercise to determine the adequacy of railroad revenues should be abandoned.[2]

1. The method is discredited, quite simply, by the nonsensical results it produces. The core of the economic concept of revenue adequacy is as a test of the ability of a company to raise capital to undertake any and all economically justifiable investments. To this strictly economic criterion might arguably be attached the additional traditional regulatory condition that the company be able to raise that capital without diluting the equity of its existing shareholders.[3]

This criterion translates into the requirement that present holders as well as future purchasers of the company's stock must see a reasonable prospect that it will earn a return at least equivalent to the cost of capital on the totality of the net book value of its investments or assets.

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[1] Robert Julius Thorne Professor of Political Economy, Emeritus, Cornell University; Special Consultant, National Economic Research Associates, Inc.

[2] Insofar as the STB undertakes annual revenue adequacy reviews in order to meet the requirements of Section 205 of the Railroad Revitalization and Regulatory Reform Act of 1976, adoption of my recommendation would require legislative action.

[3] See the demonstration in my *The Economics of Regulation* that a company may be able to raise capital for all efficient future investments, but only at the expense of such dilution, when it is either able or permitted by its regulators to earn (more precisely, because future investors expect it to be able to earn) something less than the cost of capital on the totality of its investments (Vol. 1, pp. 46-47).

Consulting Economists

There is a simple market measure of whether that requirement is or is not being met—namely, the relationship between the market value of the company's stock—the price that new purchasers are willing pay for it and at which existing shareholders willingly continue to hold it—and its net book value. If that ratio is equal to or greater than unity—that is, if the market value equals or exceeds net book value—that means that investors collectively expect earnings on invested capital to exceed the cost of capital.

In its revenue adequacy determination for 1995, the STB found that 8 of the 11 Class I railroads were "revenue inadequate." Here are the market to book ratios at the end of 1995 and 1996 for the six Class I railroads in the revenue inadequate group that are publicly traded:

RAILROAD	1995 MARKET-TO-BOOK RATIO	1996 MARKET-TO-BOOK RATIO
AT & SF	2.32 (a)	2.30 (a)
Burlington Northern	2.32 (a)	2.30 (a)
Conrail	2.13	2.81
CSX Transportation	2.26	1.88
Kansas City Southern	2.60	2.23
Southern Pacific	3.53	2.13(b)

(a) BN and AT&SF were merged during 1995; ratios are for BNSF.
(b) SP was merged in 1996 with UP; ratio for 1996 is UP ratio.

Observe that in every case the market/book ratio is well in excess of unity: the lowest ratio is 1.88, the average is 2.41 and the median 2.30

I find this comparison definitive. Clearly investors collectively expect the prices these companies can be expected to be able to charge and the volume of business they can be expected to attract will be far more than sufficient to produce a return in excess of the costs of capital—and are therefore willing to make capital available to them on terms that involve no dilution of existing shareholders' equity.[4] While it could be argued that the observed deviations

[4] The willingness of these railroads to plow back earnings rather than pay them out as dividends further corroborates this conclusion. Since they are not subject to an obligation to serve, it would be irrational for them to reinvest (continued...)

between market prices and book values are to at least some extent attributable to non-railroad assets and operations. It is highly unlikely that these very high ratios can be entirely explained by those operations, as Professor Hass explains.

II. The force of this evidence is magnified by the consideration, also adduced by Professor Hass, that the net book value of the assets of those companies has been inflated as a result of acquisitions and/or mergers. Whenever and wherever the net book value of a company's stock or assets has served as the basis for determining its permissible return for regulatory purposes—as it is in the STB's revenue adequacy calculations—its is axiomatic that those book values must be based on the original cost of the assets. As the U.S. Supreme Court has recognized, to incorporate market-value-based write-ups in the rate base to which the allowable rate of return is applied in determining a regulated company's revenue requirements or entitlements—which in turn determine its allowable prices—is to introduce a fatal circularity into the process: allowable prices are set on the basis of the market value of assets which must be based in turn on the expected prices.

It would similarly eviscerate the regulatory process if the net book value that serves as the investment base in these revenue adequacy calculations were not the original cost of the assets when they were first constructed or acquired but the prices <u>at which they were subsequently valued</u> in or as the result of asset transfers, mergers or acquisitions. To permit rates (or calculations of revenue adequacy) to be based on the prices of those subsequent transfers would be to permit easy evasion of regulation: the assets could be transferred at prices inflated above net original cost and those inflated valuations would then automatically be translated into correspondingly inflated revenue or return targets for subsequent revenue adequacy calculations.

(...continued)

retained earnings in this way if they did not expect the investments to earn an adequate return. For 1995 and 1996, the average retention rates [for these "non-revenue-adequate" carriers?] were 80 and 76 percent, respectively, with the lowest being 65 percent (Conrail in 1996).

Yet, as Professor Hass points out, this is exactly what has happened in the present instance: the asset valuations entailed by the numerous mergers, acquisitions, consolidations and reorganizations of railroads since 1980 have found their way into the book values on the basis of which the revenue adequacy assessments have continued to be made—in a self-justifying cycle of upward valuations of assets and correspondingly increased net revenues required for revenue adequacy.

I emphasize that this flaw is in addition to the—already decisive—record of prevailing market to book ratios far in excess of unity: the ratios would presumably be even higher if the denominators reflected the true (depreciated) original acquisition costs of the companies' assets rather than the prices at which they have been transferred to other railroads or new surviving entities.

III. Not only would an archeological endeavor by the STB to redetermine the true original costs for the railroads (let alone remedy all the other deficiencies in the STB's methods that Professor Hass identifies) be somewhere between extremely difficult and impossible. The final decisive consideration is that it would serve no useful purpose. The continuing effort to assess revenue adequacy is a vestigial carryover from the era of thoroughgoing regulation of the railroads, public-utility-style. But the railroads have been deregulated for more than 16 years. With most rail traffic moving under contract or exempt from regulation, the only remaining regulation is of the rates they charge captive shippers. The ceiling applied by the agency in every major rate case during the past dozen years in fulfillment of that responsibility—stand-alone cost—makes no use of revenue adequacy determinations; and I am informed that there are no recommendations, by either shippers or carriers, that the stand-alone cost ceilings be modified either upward or downward on the basis of those determinations.

* * * * *

In sum, the present method of determining revenue adequacy produces results totally discredited by the ultimate test—the behavior of investors and financial markets; it incorporates a fatal circularity; and it serves no purpose such as might justify the forbidding effort to correct those defects. It is time to give the exercise the burial—decent or otherwise—that it has richly earned.

An Evaluation of the Measurement and Use of the STB's Annual Railroad Revenue Adequacy Determination

Jerome E. Hass[1]

I. INTRODUCTION

Price regulation of commerce is called for in situations where workable competition (existing or potential) is deemed ineffective. Traditional regulation relied on the principle that regulation should emulate that which would occur in a competitive market—where prices are cost-based. Traditional regulation thus allows the regulated entity to charge prices that are no greater than the prudent costs incurred in providing the good or service in question.

An important element of the cost of service is the return allowed on invested capital. As articulated in the famous Supreme Court Hope and Bluefield cases, the return on invested capital must be sufficient to allow the regulated entity to attract and retain the capital necessary to provide adequate service. This gives rise to the measure called the cost of capital and the court mandate that a regulated entity must have revenues sufficient to cover not only operating costs but also allow the enterprise the fair opportunity to earn its cost of invested capital.

Under the Railroad Revitalization and Regulatory Reform Act of 1976, the Interstate Commerce Commission ("ICC") was charged with the responsibility to develop and promulgate railroad revenue adequacy standards. With the passage of the Staggers Rail Act of 1980, full regulation of railroad prices and service became history. But there are still selected situations which call for railroad regulation and it appears that findings regarding railroad revenue adequacy play an important role in some aspects of that regulation.[2] While Congress abolished the ICC at the end of 1995, its successor, the Surface Transportation Board ("STB" or "Board"), was given the responsibility of continuing to determine whether railroads are revenue adequate.

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[2] It is apparently common for the railroads to refer to the fact that the majority of Class I railroads fail the STB's revenue adequacy test in cases where the Board has jurisdiction, both those involving possible rate reductions and other contexts (such as mergers and line crossings).

The purpose of this report is to examine the reasonableness of the measure used by the STB to determine railroad revenue adequacy. As demonstrated below, the measure used by the STB is fatally flawed and is clearly giving erroneous signals. Given that the flaws are not easily remedied, that the railroads are financially very healthy, and that there is no meaningful regulatory role for revenue adequacy determinations to play, it is time to abolish the requirement for this arcane and meaningless exercise.

II. MEASURING REVENUE ADEQUACY

The application of the principle of allowing a regulated entity the opportunity to earn the cost of capital on its invested capital appears to be straight-forward and gives rise to the notion of revenue adequacy. As practiced by the STB, revenue adequacy is the simple determination as to whether a railroad's most recent year's revenues produced operating income (revenues less operating costs) that resulted in earning a return on invested capital at least a great as its cost of capital. In making this comparison, the STB first determines the railroad industry's cost of capital (which it estimated to be 11.7 percent for 1995) and then compares the rates of return earned on invested capital by each of the Class I railroads to that cost of capital in order to judge whether these railroads are "revenue adequate," where a railroad's revenue is deemed adequate if its rate of return on average invested capital equals or exceeds the estimated cost of capital for the industry.

RETURN ON INVESTMENT. The STB's measure of the rate of return on invested capital is the ratio of after-tax income from railroad operations to capital invested in railroad assets (the average of railroad assets , including working capital, less accumulated deferred income taxes). The STB's measure of rate of return on invested capital, which it calls "Return on Investment" or "ROI," is seriously flawed for a number of reasons.

First, the numerator includes one-time "special charges" that can materially alter the reported ROI. The Association of American Railroads ("AAR") reported that during 1995 seven Class I railroads recorded special charges totaling $1.742 billion on a pre-tax basis. *Analysis of Class I Railroads, 1995*, p. 4. On an after-tax basis ($1.132 billion using a 35% tax rate), the overall return on capital for the industry would increase from 7.7 to 10.3 percent if these special charges were not considered.[3]

Second, there are problems with the denominator of the STB's ROI measure because of the book accounting treatment of mergers in the industry. While major mergers, such as ATSF/BN and SP/UP get lots of attention, smaller scale acquisitions take place all the time (such as BN's acquisition of Washington Central, IC's purchase of CCP Holdings and KCS's acquisition of MidSouth Corporation and its purchase of 49 percent of the shares of Mexrail, which owns Tex-Mex). These acquisitions or mergers are usually made at premium prices over the book values of the underlying assets. To the extent that the intangible value paid is reflected in the subsequent value of railroad assets, the denominator of the STB's measure of return on investment no longer reflects depreciated original cost and the notion of earning a reasonable return on cost is lost.[4]

The flaw actually creates a problem with the numerator as well—because the intangible assets created by the acquisition are subsequently amortized, reducing the operating income (similar to depreciation expenses). Hence the overall effect of the accounting for acquisitions at prices in excess of book values is to increase the denominator and reduce the numerator of the ROI measure in subsequent years.[5]

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[3] In a recent STB filing regarding "bottleneck" issues, James N. Heller noted in his Verified Statement that the removal of these one-time charges in order to reflect more fundamental profitability resulted in the ROIs of individual railroads increasing from 0.4 percent to 61.1 percent. For example, the combined BNSF ROI would increase from 5.8 percent to 9.7 percent if the expenses of $735 million associated with "merger, severance and asset charges" were removed from the numerator of the ROI calculation (on an after-tax basis).

[4] The extent to which book values increase through this process is unknown. In 1994, UP and CNW reported Net Road and Equipment values of $9.141 and $1.413 billion, respectively, and $10.55 billion in total. In 1995, after the acquisition was complete, the combined UP/CNW reported Net Road and Equipment of $13.52 billion, for a composite increase of nearly $3 billion in Net Road and Equipment. UP's acquisition of the 70 percent of CNW that it did not already own was for about $1.2 billion, which was about $1 billion more than its book value. The extent to which the $1 billion is reflected in the $3 billion increase is unclear. Heller (see fn. 3) reports that the acquisition of SF by BN resulted in a "write-up" of $2.8 billion in SF's investment base and that UP's acquisition of SP will result in a write-up in 1996 of $2.9 billion in SP's investment base.

[5] There also appears to be another flaw in the STB's ROI measure. The STB bases the numerator of its return calculation on Net Railroad Operating Income, taken from Schedule 210 of Form R-1. Net Railroad Operating Income excludes both the income from the leasing of railroad assets and lease payments for leased railroad assets. Insofar as the leased railroad assets are included in the denominator of the ROI measure, the income

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Third, ROI, like many short-term measures, also suffers from extreme swings as railroad operating margins change over time.[6]

COST OF CAPITAL. The cost of capital for the Class I railroads is determined by the STB as the weighted average of the costs of debt (in various forms), preferred equity, and common equity, where the weights are the market values of the various forms of capital. The STB's cost of capital measure also has several serious flaws.

First, the Board's analysis inappropriately mixes before-tax and after-tax costs of debt and equity, respectively; given the return on railroad investment is expressed on an after-tax basis, then the interest expense component of the weighted cost of capital should be adjusted to reflect the tax deductibility of interest as a matter of economic consistency.

Second, the weights used in the cost of capital estimation should be based on book values of debt , preferred and common equity, not market values; given that market values for the stocks of the railroads are substantially in excess of their book values, this mis-weighting results in a substantial overstatement of the cost of capital for the railroads[7].

Third, the STB's estimate of the cost of equity is based on a constant dividend growth rate stock price model (sometimes called the "discounted cash flow" model); the growth component is set at 10.69 percent, a rate that is impossible to sustain in perpetuity; in an economy with an expected inflation rate of about 3 percent, a real growth rate of 7.7 percent would eventually result in the railroads overtaking the world.[8]

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therefrom (and the lease expenses associated with those assets that helped product operating income) should not be excluded.

[6] For example, Southern Pacific's Net Revenues from Operations fell from $224 million to a negative $21 million from 1994 to 1995.

[7] It is easy to get confused on this issue. Most finance textbooks advocate the calculation of the weighted cost of capital using market value weights, a prescription that is perfectly correct for a non-regulated entity seeking an estimate of its cost of capital as a hurdle rate for forward-looking investment decision-making. But in a regulated rate-setting context, the return is allowed on the historic cost of the net assets (rate base) and is set to earn the costs of debt and equity capital on the book values of the debt and equity.

[8] The growth component was based on five-year earnings per share growth projections made by security analysts. While several studies have tested the reasonableness of such projections as indicators of investor expectations and found them to have explanatory power, regulatory agencies that face cost of capital problems on a repeated
(continued...)

Fourth, although insignificant in 1995 (only 1.2 percent of total capital), the cost of preferred stock was severely understated because the cost of Conrail's Series A ESOP convertible junior preferred (the dominant issue of preferred stock outstanding among the Class I railroads) was set at its market dividend yield of 3.03 percent; the stock is clearly selling on the basis of its conversion value and should be treated as common stock with common stock cost.

If these four changes are made to the cost of capital estimate, the result is a reduction in the weighted cost of capital from 11.7 percent (as reported in the STB's "Railroad Cost of Capital—1995," Ex Parte 523, June 5, 1996) to 10.3 percent. The latter is based on a cost of debt of 7.4 percent before tax (as per the STB), an income tax rate of 35 percent, a 12.5 percent cost of equity (STB's estimate was 13.4 percent) and a 29/71 debt-to-equity capital structure (based on book values as reported in *Analysis of Class I Railroads, 1995*, Association of American Railroads, lines 76, 78, 79, 80, 81, 82 and 97).[9]

Note that simply adjusting the ROI to exclude one-time ("special") charges and adjusting the cost of capital estimates, as discussed above, results in the industry ROI equaling the estimated industry cost of capital—implying that, without further adjustment for acquisition write-ups, the industry is revenue adequate.[10]

(...continued)
basis have expressed concerns about sole reliance on such short-term forecasts. See, e.g., Ozark Gas Transmission System, 68 FERC ¶ 61,082, 61,107 (1994), wherein the Federal Energy Regulatory Commission found that "five year projections are not of themselves incorrect, but merely limited to too brief a time period to meet the requirement of the DCF model." Similarly, in Wyoming Interstate Company, Ltd., 69 FERC ¶ 61,259, 61,922 (1994), the Commission found that the "securities' analysts' projected growth rate for the next five years ... implicitly ignored any potential changes in the growth rate over the remaining life of the firm ... (and) is inherently inconsistent with the theory of the constant growth rate DCF model."

[9] For the set of seven Class 1 railroads used by the STB to calculate the industry cost of capital, the debt-to-equity ratio based on market values was estimated to be 26/74; using a conservative 2:1 composite market-to-book ratio for these railroads, the book value debt-to-equity ratio would be 41/59 and the resultant after-tax weighted cost of capital would be 9.3 percent.

[10] It should also be noted that the Board's methodology is flawed because it uses a company-specific after-tax return on investment measure that reflects the tax deductibility of interest on the specific company's debt with an industry average cost of capital. If all railroads had similar capital structures, such a comparison would be acceptable. But the utilization of debt varies substantially across Class I railroads: for example, at the end of 1995 Soo Line had a debt-to-equity ratio of 67/33 compared to CSX's 13/87; Grand Trunk Western's equity was
(continued...)

III. INTERPRETING REVENUE ADEQUACY

There is no meaningful relationship between the STB's measure of revenue adequacy and the financial well-being of the Class I railroads.

First, if investors expect that the prices of the regulated entity are or will be set so that the entity will not have the fair opportunity to earn its cost of capital, then the book value of its equity (as the residual capital supplier) will exceed its market value.[11] In the case of the Class I railroads, at the end of 1995 market-to-book ratios for the 8 publicly-traded railroads ranged from 2.13 to 3.53 times and averaged 2.53 times.[12] This strongly suggests that investors expect the railroads to earn more than the cost of capital in the future.[13]

It should be noted that some of the divergence between market values and book values may be attributable to non-railroad assets which are carried on the books at cost but may be worth substantial sums if and when sold (such as real estate). For example, in testimony associated with its acquisition by Union Pacific, Southern Pacific Transportation Company indicated that it had a real estate portfolio worth about $1 billion.[14] This translates into about $6.40 per share, so that the remaining market value of the railroad assets for SP at the end of 1995 was about $17.60 per share, which was 2.59 times book value. Similarly, the market prices of these railroad companies also reflect non-rail activities. For example, railroad

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negative. Given substantial variations in debt utilization, the after-tax weighted average costs of capital for the Class I railroads is likely to differ substantially between railroads and using a composite average, even if calculated correctly, would be inappropriate.

[11] For example, if the book value of the regulated firm's stock is $20 per share and the market expects the firm to earn 10 percent on its book value, then the market value of the shares will be $16 if the market requires a return on 12.5 percent to adequately compensate for time value and risk.

[12] See the attached exhibit. The highest ratio was that of Southern Pacific, which was in the midst of a merger. The next-highest ratio was Illinois Central at 3.34 times. The ratios at the end of 1996 (when the high SP ratio is replaced by a high Conrail ratio) were, on average, somewhat less, but still well above 2 times. Weighted averages (using equity market values as weights) were only slightly less than simple averages.

[13] This expectation could be achieved by decreases in operating costs as well as price increases. *Value Line* (September 20, 1996) reports that operating margins (the complement of operating costs) for the railroad industry (at the company level, which include non-rail activities) have increased from 22.6 percent in 1992 to 26.1 percent in 1995 and are predicted to get to 30.1 percent in the 1999-2001 time frame.

[14] Deposition of Lawrence Yarberry, Chief Financial Officer for Southern Pacific, STB Finance Docket No. 32760.

operating revenues were only 46 percent of the total revenues of CSX for 1995. However, railroad activities accounted for 75 percent of CSX's assets and 79 percent of its total operating profits. Kansas City Southern Industries received a large fraction of its operating income from non-rail activities. But all the other Class I railroads were owned by companies that had virtually all (85 percent or more) of their assets and operating revenues associated with railroading activities. Thus, it appears that while non-railroading activities and assets could account for a portion of the observed differences between book and market values for companies that own Class I railroads, the very large differences between the observed ratios and unity cannot be explained on the basis of these non-rail activities.[15]

Second, there is the objective evidence from the railroad companies themselves. If investments in railroad activities are not expected to earn at least the cost of capital, then these firms should not be retaining the earnings they generate for their shareholders but rather pay those earnings out as dividends so that shareholders can reinvest them elsewhere to make an adequate return. In 1995, all of the Class I railroads, with the exception of Union Pacific, retained (plowed back) more than 60 percent of their earnings; Union Pacific retained only 43 percent. Overall, the industry average was 73 percent for 1995 and 67 percent for 1996. This evidence supports the contention that the managements and boards of directors of these companies believed that the investment opportunities within the industry were financially attractive.

Third, the very title of the measure suggests than if an inadequacy is found, it is associated with revenues. This may not be the case. While there are clearly large year-to-year changes in the operating ratio (ratio of operating expenses to revenues) in the industry, there are strong pressures to decrease the ratio over time. Some railroads have ratios near or below 70 percent (Illinois Central and Norfolk Southern), while others struggle to get below 100 percent (Soo Line and GTW). When coupled with increases in capital turnover (more efficient use of

[15] Non-rail activities and assets might pull the market-to-book ratios down. This would be the case if the non-rail activities were not very profitable. Such is likely the case at CSX: in 1995, the ratios of operating income to assets for rail and non-rail activities (barge, container shipping, and intermodal) were 8.7 and 6.9 percent, respectively.

capital), the result is an expectation of increasing returns to invested capital even without price increases:

Return on Invested Capital = Income/Revenues x Revenues/Capital
= Profit Margin x Capital Turnover

During 1995, the Class I railroads operated at an after-tax profit margin of about 8.9 percent (13.7 percent before-tax at a 35 percent tax rate) and a capital turnover rate of 0.73.[16] If the after-tax margins can be increased to, say, 11 percent and capital turnover improved to, say, 0.85, then the after-tax return on invested capital would increase from the 6.5 percent realized in 1995 to 9.35 percent. While these numbers are only illustrative, they do indicate how relatively small changes can produce dramatic effects, effects that could result in the industry being deemed more than revenue adequate without any increases in prices.[17] The most recent *Value Line* (December 20, 1996) states that "[t]he railroads have done a good job of lowering their fixed costs over the past five years, and we think this trend will continue."

Fourth, there is a clear divergence between the notion that eight of the eleven Class I railroads were revenue inadequate in 1995 and the ability of these firms to raise cash and the willingness of others to pay substantially more than book value for acquisitions. It is generally believed that if the regulated entity does not have a fair opportunity to earn its cost of capital, then it will not be able to attract new capital or will be able to do so only at the expense of existing capital suppliers. But the railroads are active issuers of debt to finance equipment purchases, system improvements and acquisitions. Those which have debt rated by Moody's carry investment grades (with the exception of SPRR's senior note, rated Ba1) and their transportation trust certificates are often highly rated. Several railroads have either sold stock outright or used stock as currency in acquisitions over the past several years.[18] Value Line rates

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[16] The AAR 1995 report indicates a before-tax profit margin of 13.58 percent for all Class I railroads.

[17] The degree to which investors expect improvements can, perhaps, best be seen in the "synergies" predicted in recent acquisitions. For example, UP's acquisition price for the stock of SP was based on synergies in excess of $750 million per year pre-tax. See *The Wall Street Journal*, December 1, 1995, page B10. The joint railroad revenues of Southern Pacific and Union Pacific in 1995 were $9.54 billion, so that the synergies would increase the after-tax (at 35 percent) margin of the combined companies by 5.1 percent.

[18] Even Southern Pacific, thought to be among the most financially weak of the Class I railroads, was able to sell stock substantially in excess of its book value in 1993 and 1994.

the financial strength of the seven Class I railroads it follows from moderate (B for KCS) to strong (A+ for NS). Standard & Poor's November 30, 1995 *Industry Survey* stated that "[a]lthough the industry if failing to earn its cost of capital as defined by the ICC, it is in fact a picture of health."

UP paid $35 per share for CNW, which had a book value the year before the acquisition of $7; BN paid $20 per share for ATSF, which had a book value of $6.67 per share the year before its acquisition; UP paid $25 per share for SP, which had a book value of $6.80 per share the year before its acquisition; and the bidding war for Conrail has pushed its price to $110 per share, which had a book value of about $32.83 share at the end of 1995.

Fifth, even if all the defects discussed above were corrected, the method of measuring revenue adequacy chosen by the Board is flawed. That is, the Board's measure could signal inadequacy in a given year while, at that time, the current revenues are entirely adequate in terms of providing a reasonable return on invested capital when judged in the proper context.

The best way to illustrate this point is to compare two alternative cost-of-service methodologies, both fully compensatory (i.e., although their price patterns are different over time, both sets of prices allow investors full recovery of their investment and a reasonable return thereon): depreciated original cost and trended original cost. Under the Depreciated Original Cost ("DOC") methodology, the rate base is the depreciated original cost of the net assets (assets at cost less accumulated depreciation) less accumulated deferred income taxes (consistent with Schedule 250) and the return on the equity-financed portion of the rate base is set in nominal terms (such as the 13.4 percent used by the STB). As accumulated depreciation increases over time and the rate base declines, the cost-based price of the service declines, other cost-of-service components held constant. Under the Trended Original Cost ("TOC") methodology, only the real portion of the return on equity is reflected in current rates; the inflation component of the return on equity is deferred until a later date. Hence the TOC rate base is greater than the DOC rate base by the accumulated deferred return balance.[19] The TOC

[19] See "Inflation and Rate of Return Regulation," Stewart C. Myers, A. Lawrence Kolbe, and William B. Tye, *Research in Transportation Economics*, Vol.2, pp. 83-119, 1985. The Federal Energy Regulatory Commission uses the Trended Original Cost methodology in its regulation of oil pipelines.

methodology produces pricing that start at a lower level than those under the DOC methodology, and these cost-based prices drift upward over time rather than downward, as they would under the DOC methodology. Hence, if a regulated entity were pricing its service using a TOC-based pricing scheme, in the early years of the life of the rate base (or, more generally, during the time when the firm is adding to its asset base), its revenues will appear "inadequate" when measured against those necessary under a DOC methodology.

The STB's methodology is effectively a DOC-based approach to cost of service. Yet, it is logical that the railroads should be using a TOC-based approach to pricing their services over time (so that prices tend to rise with inflation). Hence, it is entirely plausible that the test applied by the Board is yielding false-negative results: railroad revenues appear to be inadequate, but are factually adequate when judged according to the inter-temporal scheme under which they are being played out.

IV. CONCLUSIONS

The requirement that the STB shall annually determine the railroad revenue adequacy should be put to rest. The Board's measure of return on investment for each Class I railroad is fraught with short-comings and severely short-sighted; and the cost of capital estimate it uses as a benchmark against which to judge adequacy is severely flawed as well. Simple measures, such as market-to-book ratios, retention rates and debt ratings indicate that the railroads have a high degree of financial integrity and are expected to earn returns on the book value of equity well in excess of their cost of capital. They clearly have no difficulty in raising capital without causing any dilution for existing shareholders. Yet all but three of the eleven Class I railroads reviewed by the STB indicate revenue inadequacy. Given the fatal flaws in the STB's methodology and the potential misunderstandings that result from its publication, now is the time to remove the substantial burden on both the railroads and STB staff of making the filings and calculations necessary to produce this useless and potentially misleading statistical analysis.

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Professor Kahn received his Bachelor's and Master's degrees from New York University and a Doctorate in Economics from Yale University. Following service in the Army, he served as Chairman of the Department of Economics at Ripon College, Wisconsin. He moved to the Department of Economics at Cornell University, where he remained until he took leave to assume the Chairmanship of the New York Public Service Commission. During his tenure at Cornell, Professor Kahn served as Chairman of the Department of Economics, member of the Board of Trustees of the University and Dean of the College of Arts and Sciences.

Throughout his career, Professor Kahn has served on a variety of public and private boards and commissions including: the Attorney General's National Committee to Study the Antitrust Laws; the senior staff of the President's Council of Economic Advisors; the Economic Advisory Council of American Telephone & Telegraph Company; the National Academy of Sciences Advisory Review Committee on Sulfur Dioxide Emissions; the Environmental Advisory Committee of the Federal Energy Administration; the Public Advisory Board of the Electric Power Research Institute; the Board of Directors of the New York State Energy Research and Development Authority; the Executive Committee of the National Association of Regulatory Utility Commissioners; the National Commission for Review of Antitrust Laws and Procedures; the New York State Council on Fiscal and Economic Priorities; the Governor of New York's Fact-Finding Panel on Long Island Lighting Company's Nuclear Power Plant at Shoreham, L.I.; the Governor of New York's Advisory Committee on Public Power for Long Island; the National Governing Board of Common Cause; and, in 1990, as Chairman of the International Institute for Applied Systems Analysis Advisory Committee on Price Reform and Competition in the USSR.

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UNIVERSITY OF MISSOURI
Graduate Study, 1937-1938

NEW YORK UNIVERSITY
M.A., Economics, 1937
A.B. (summa cum laude), Economics, 1936

EMPLOYMENT:

1961-1974	NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.
1980-	Special Consultant
	CORNELL UNIVERSITY
1947-1989	Assistant Professor; Associate Professor; Robert Julius Thorne Professor of Economics; Robert Julius Thorne Professor of Political Economy, Emeritus, 1989-; Chairman, Department of Economics; Dean, College of Arts and Sciences; on leave 1974-80.
	NEW YORK UNIVERSITY SCHOOL OF LAW
Spring 1989	Visiting Meyer Professor of Law
	UNITED STATES GOVERNMENT
1978-1980	Advisor on Inflation to President Carter
1978-1980	Chairman, Council on Wage and Price Stability
1977-1978	Chairman, Civil Aeronautics Board
1955-1957	Senior Staff, Council of Economic Advisors to the President
1943	U.S. Army, Private
1943	War Production Board
1942	Associate Economist, International Economics Unit, Bureau of Foreign and Domestic Commerce, Department of Commerce
1941-1942	Associate Economist, Antitrust Division, U.S. Department of Justice
	NEW YORK STATE PUBLIC SERVICE COMMISSION
1974-1977	Chairman
	BROOKINGS INSTITUTION
1940, 1950-1951	Staff Economist
	RIPON COLLEGE
1945-1947	Assistant Professor, Chairman, Department of Economics
	TWENTIETH CENTURY FUND

1944-1945	Research Economist
	COMMISSION ON PALESTINE SURVEYS
1943-1944	Economist
	UNIVERSITY OF MISSOURI
1937-1938	Teaching Assistant

CONSULTANCIES AND PROFESSIONAL ACTIVITIES:

1994-	American Airlines on code-sharing
1994-	Antitrust Division, U.S. Department of Justice, on the application of Ameritech for waivers of the interexchange restrictions in the AT&T Modified Final Judgment
1993-1994	Court-appointed expert in State of New York v. Kraft General Foods, Inc., et al., U.S. District Court, S.D.N.Y.
1992	New Zealand Telecom on the progress of competition in New Zealand telecommunications
1992	Rochester Telephone Company on corporate restructuring and deregulation
1992	Russian Government on economic reform
1991	British Mercury on terms of competition with British Telecom
1989	City of Denver on charging and financing of Stapleton Airport
1988-1990	Attorneys General, New York and Pennsylvania, on airline mergers
1985	Attorney General, State of Illinois, on Illinois Bell rates
1981-1984	City of Long Beach, California, the Coca-Cola Company and American Airlines on antitrust litigation
1981-	Economic commentary, Nightly Business Report (PBS)
1980-1982	Advisor to Governor Carey on Telecommunications Policy
1968	Ford Foundation
1966	National Commission on Food Marketing
1965,1974	Federal Trade Commission
1963-1964	Antitrust Division, Department of Justice
1960-1961	U.S. Department of Agriculture
1957-1961	Boni Watkins, Jason & Co.

See also the list of testimony below.

MEMBERSHIPS:

1992-	Member, New York State Telecommunications Exchange
1992-93	Member, Ohio Blue Ribbon Panel on Telecommunications Regulation
1991-	Board of Editors, *Review of Industrial Organization*
1990-92	Chairman, International Institute for Applied Systems Analysis Advisory Committee on Price Reform and Competition in the USSR
1986	Governor Cuomo's Advisory Panel on public power for Long Island

1983-89	Governor Cuomo's *Fact-finding* Panel on Long Island Lighting Company's Nuclear Power Plant at Shoreham, L.I.
1983-90	New York State Council on Fiscal and Economic Priorities
1982-	*The American Heritage Dictionary* Usage Panel
1982-1985	Governing Board, Common Cause
1980-1986	Director, New York Airlines
1978-1979	National Commission for the Review of Antitrust Laws and Procedures
1975-1977	Project Committee, Electric Utility Rate Design Study, Electric Power Research Institute
1974-1975	National Academy of Science Review Commission on Sulfur Oxide Emissions
1974-1977	Public Advisory Board, Electric Power Research Institute
1974-1977	Environmental Advisory Committee, Federal Energy Administration
1974-1977	Executive Committee, National Association of Regulatory Utility Commissioners, and Chairman, Committee on Electric Energy
1968-1974	Economic Advisory Board, American Telephone & Telegraph Corporation
1965-1967	Economic Advisory Committee, U.S. Chamber of Commerce
1967-1969	Chairman, Tompkins County Economic Opportunity Corporation
1964-1969	Board of Trustees, Cornell University
1961-1964	Board of Editors, *American Economic Review*
1953-1955	Attorney General's National Committee to Study the Antitrust Laws

HONORS AND AWARDS:

May 1995	Wilbur Cross Medal for outstanding achievement, Yale University
Mar 1989	Burton Gordon Feldman Award for Distinguished Public Service, Gordon Public Policy Center, Brandeis University
Feb 1989	Distinguished Service Award, Public Utility Research Center, University of Florida
Nov 1988	International Film and TV Festival of New York, Bronze Medal presented to The Nightly Business Report/WPBT2 for Editorial/Opinion Series written by Alfred E. Kahn
Apr 1986	Harry E. Salzberg 1986 Honorary Medallion for outstanding achievement in the field of transportation
Oct 1984	Distinguished Transportation Research Award of the Transportation Research Forum
1981-1982	Vice President, American Economic Association
1978	Richard T. Ely lecturer, American Economic Association, 1978
1978	Rejection Scroll, International Association of Professional Bureaucrats
May 1985	State University of New York (Albany), DHL (Hon.)
May 1983	Colgate University, LL.D. (Hon.)
June 1982	Northwestern University, LL.D. (Hon.)
May 1980	Ripon College, LL.D. (Hon.)
May 1979	University of Massachusetts, LL.D. (Hon.)
May 1978	Colby College, LL.D. (Hon.)
1977-	Fellow of the American Academy of Arts and Sciences
1976	Distinguished Alumni Award, New York University

1976	American Economic Association, Section on Public Utilities and Transportation, citation for distinguished contributions
1954-1955	Fulbright Fellowship, Italy
1936-	Phi Beta Kappa
1939-1940	Yale-Brookings Fellow

BOOKS:

The Economics of Regulation, 2 volumes, John Wiley, 1970 and 1971. Reprinted by The MIT Press, 1988, with a new "Introduction: A Postscript, Seventeen Years After," pp. xv-xxxvii.

Integration and Competition in the Petroleum Industry, (with Melvin G. DeChazeau), Petroleum Monograph Series, Volume 3 (Yale University Press, 1959). Reprinted in 1971.

Fair Competition: The Law and Economics of Antitrust Policy (with Joel B. Dirlam) (Cornell University Press, 1954). Reprinted by Greenwood Press, 1970.

Great Britain in the World Economy (Columbia University Press, 1946). Reprinted in 1968.

MAJOR ARTICLES:

"How to Treat the Costs of Shared Voice and Video Networks in a Post-regulatory Age," *Policy Analysis*, #264, November 27, 1996, Cato Institute.

"Competition and Stranded Cost Re-revisited," 36 *Natural Resources Journal* (1996) forthcoming.

"Deregulation of the Public Utilities—Transitional Problems and Solutions," *Economic Papers*, Economic Society of Australia, September 1995, pp. 1-17. (Published in *Réseaux* nos. 72-73 Juillet/Octobre 1995 by CNET as "Déréglementation des Services Publics: Problèmes transitoires et solutions.")

"The Challenge for Federal and State Regulators: Transition from Regulation to Efficient Competition in Electric Power," with William J. Baumol and Paul L. Joskow, Edison Electric Institute, December 9, 1994.

"Competition in the Electric Industry is Inevitable and Desirable," *The Electric Industry in Transition*, Public Utility Reports, Inc. and New York State Energy Research and Development Authority, December 1994, Chapter 3, pp. 21-31.

"Can Regulation and Competition Coexist? Solutions to the Stranded Cost Problem and Other Conundra," *The Electricity Journal*, Volume 7, Number 8, October 1994, pp. 23-35.

"The Pricing of Inputs Sold to Competitors: A Comment," in *Yale Journal on Regulation*, Vol. 11, No. 1, Winter 1994, pp. 225-240.

"Airline Deregulation," in *The Fortune Encyclopedia of Economics*, David R. Henderson, Ph.D., ed., New York: Warner Books, 1993, pp. 379-384.

"Change, Challenge and Competition The Report of the National Commission to Ensure a Strong Competitive Airline Industry, August 1993," *Regulation*, No. 3, 1993.

"The Competitive Consequences of Hub Dominance: A Case Study," in *Review of Industrial Organization*, Vol. 8, 1993, pp. 381-405.

"Pricing of Telecommunications Services: A Comment," in *Review of Industrial Organization*, Vol. 8, 1993, pp. 39-41.

"The Purposes and Limitations of Economic Regulation; The Achievements and Problems of Deregulation" and "Reflections and Conclusions on British and U.S. Experience: The Future of Regulation," in *Incentive Regulation: Reviewing RPI-X & Promoting Competition, Proceedings 2*, Based on papers presented at two CRI seminars in London on 4 June and 15 July 1992, CRI (Centre for the Study of Regulated Industries), October 1992, pp. 1-17 and 93-104.

"Market Power Issues in Deregulated Industries," in *Antitrust Law Journal*, Vol. 60, Issue 3, American Bar Association, 1992, pp. 857-866.

"Règolamentazione e concorrenza nelle imprese de pubblica utilità: un <<inquadramento teorico>>," *L'INDUSTRIA* / n.s., a. XIII, n. 2, aprile-giugno 1992, pp. 147-166.

"Least cost planning generally and DSM in particular," in *Resources and Energy* 14 (1992), Elsevier Science Publishers, North-Holland, pp. 177-185.

"Price Deregulation, Corporatization and Competition" (with M.J. Peck), in *What is to be Done? Proposals for the Soviet Transition to the Market*, M.J. Peck and T.J. Richardson, eds., New Haven: Yale University Press, 1991.

"Thinking About Predation--A Personal Diary," in *Review of Industrial Organization*, Vol. 6, The Netherlands: Kluwer Academic Publishers, 1991, pp. 137-146.

"An Economically Rational Approach to Least-Cost Planning For Electric Power," *The Electricity Journal*, Vol. 4, Number 5, June 1991, pp. 11-20.

"The Changing Focus of Electric Utility Regulation," *Research in Law and Economics*, Richard O. Zerbe, Jr., Victor P. Goldberg, eds., Vol. 13, JAI Press, Inc., Spring 1991, pp. 221-231.

"The Soviet Economic Crisis: Steps to Avert Collapse" (co-author), Executive Report 19, International Institute for Applied Systems Analysis, Laxenburg, Austria, February 1991.

"Telecommunications, Competitiveness and Economic Development--What Makes Us Competitive?", *Public Utilities Fortnightly*, Vol. 126, No. 6, September 13, 1990, pp. 12-19.

"Deregulation: Looking Backward and Looking Forward," *Yale Journal on Regulation*, Vol. 7, Spring 1990, pp. 325-354.

"Do We Need to Curb the Investments Foreigners are Making in the United States?" in *The Impact of Foreign Investment in the United States*, Touche Ross & Co., June 1989.

"Innovative Pricing of Electricity," in *New Dimensions in Pricing Electricity: Proceedings*, Palo Alto, CA: Electric Power Research Institute, April 1989.

"Competition: Past, Present and Future, Perception vs. Reality," in *Proceedings: 1988 Utility Strategic Issues Forum Planning in a Competitive Environment*, Palo Alto, CA: Electric Power Research Institute, March 1988.

"Thinking About The Record of Deregulation," in The Donald S. MacNaughton Symposium Proceedings 1987, *Economic Deregulation: Promise and Performance*, Syracuse, NY: Syracuse University, 1988, pp. 21-35.

"In Defense of Deregulation," in *Cleared For Takeoff: Airline Labor Relations Since Deregulation*, Jean T. McKelvey, Editor, Ithaca, NY: Cornell University ILR Press, 1988, pp. 343-347."

"I Would Do It Again," *Regulation*, 1988 Number 2, pp. 22-28.

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"Airline Deregulation - A Mixed Bag, But a Clear Success Nevertheless," *Transporation Law Journal*, Volume 16, No. 2, Spring 1988, pp. 229-251.

"Surprises of Airline Deregulation," *The American Economic Review, Papers and Proceedings*, Volume 78, No. 2, May 1988, pp. 316-322.

"Thoughts on the Past, Present, and Future of Telecommunications Regulation," talk presented to the Current Issues in Telephone Regulation conference at the University of Texas, Austin, October 5, 1987, reprinted in *Telecommunications Deregulation: Market Power and Cost Allocation Issues*, John R. Allison and Dennis L. Thomas, eds., Westport, CT: Quorum Books, 1990, pp. 259-268.

"The Future of Local Telephone Service: Technology and Public Policy," Fishman Davidson Center for the Study of the Service Sector, The Wharton School of the University of Pennsylvania, Discussion Paper #22, June 1987. Reprinted in *Toward The Year 2000*, ITT Key Issues Lecture Series, 1986, (New York: ITT Corp. 1987), pp. 86-99.

"Current Issues in Telecommunications Regulation: Pricing" (with William B. Shew), *Yale Journal on Regulation*, Vol. 4: 191-256, Spring 1987.

"Deregulatory Schizophrenia," *California Law Review*, Volume 75, Number 3, May 1987, pp. 1059-1068.

"A Critique of Proposed Changes," *The Future of Electrical Energy: A Regional Perspective of an Industry in Transition*, Sidney Saltzman and Richard E. Schuler (eds.), Praeger Publishers, New York, 1986, pp. 340-347.

"The Tyranny of Small Decisions and the Perils of Big Ones," in *Allocation, Ethics, and Innovation in Research and Public Policy*, National Symposium on Science and Technology, Cornell University, Washington, D.C., May, 20, 1986.

"The Theory and Application of Regulation," *Antitrust Law Journal*, Spring Meeting Issue, 1986, Volume 55, Issue 1, pp. 177-184, from ABA Antitrust Section Annual Meeting.

"Transportation Deregulation...And All That," Honorary Salzberg Memorial Lecture, Syracuse University School of Management, Syracuse, New York, April 1986. Reprinted, revised, in *Economic Development Quarterly*, May 1987, Volume 1, Number 2, pp. 91-99.

"Frontier Issues in Telecommunications Regulation," Mountain Bell Academic Seminar, Lakewood, Colorado, August 1985.

"Telecommunications Regulation: A Case Study of the Impact of a Technology on Social Institutions," for presentation at Cornell University Electrical Engineering Centennial Symposium, Ithaca, New York, June 12, 1985.

"Public Policies for Our Telecommunications Future," in *Funding the Future of Telecommunications*, a conference sponsored by Rensselaer Polytechnic Institute, supported by the NYNEX Telephone Companies, Saratoga Springs, New York, June 3-5, 1985.

"Industrial Policy and Deregulation," *Federal Bar News & Journal*, Washington, D.C., January 1985.

First Distinguished Lecture on Economics in Government, "The Macroeconomic Consequences of Sensible Microeconomic Policies," Dallas, December 28, 1984. American Economic Association meetings.

"The Regulatory Agenda," and "Concluding Comments: The Future of Access," in Alan Baughcum and Gerald R. Faulhaber, *Telecommunications Access & Public Policy*, Ablex Publishing Corporation, Norwood, New Jersey, 1984, pp. 205-210 and pp. 245-253.

"The Uneasy Marriage of Regulation and Competition," *Telematics*, Washington, D.C., September 1984.

"The Next Steps in Telecommunications Regulation and Research," *Public Utilities Fortnightly*, Arlington, VA., July 19, 1984.

"The Road to More Intelligent Telephone Pricing," *Yale Journal on Regulation*, Volume 1, Number 2, 1984, pp. 139-157.

"Telephone Deregulation: Two Views: A Needed Dose of Competition," *Challenge*, March/April 1984, pp. 24-29.

"Economic Policies For The 80s," Oppenstein Brothers Foundation Lecture, Rockhurst College and the University of Missouri, Kansas City, April 19, 1983.

"The Relevance of Industrial Organization," *Industrial Organization, Antitrust, and Public Policy*, John V. Craven, ed., Kluwer-Nijhoff, 1983.

"Some Thoughts on Telephone Access Pricing," National Economic Research Associates, April 1983.

"Deregulation: Its Meaning and Implications for Antitrust Enforcement," New York State Bar Association, 1983 *Antitrust Law Symposium*, pp. 2-14.

"The Passing of the Public Utility Concept: A Reprise," in *Telecommunications Today and Tomorrow*, Eli Noam (ed.) Harcourt Brace Jovanovich, 1983.

"Deregulation and Vested Interests: The Case of Airlines," *The Political Economy of Deregulation*, Roger G. Noll and Bruce M. Owen, eds., American Enterprise Institute Studies in Government Regulation, 1983.

"An Alternative to Reaganomics," *Increasing Understanding of Public Problems and Policies*, 1982, Farm Foundation, January 1983.

"Utility Diversification," *The Energy Journal*, Volume 4, No. 1, January 1983, pp. 149-160.

"The Airline Industry: Is It Time to Reregulate?" *Second Annual William A. Patterson Transportation Lecture*, The Transportation Center, Northwestern University. Published jointly with National Economic Research Associates, 1982. Reprinted in *The World Economy*, December 1982, London: Basil Blackwell, pp. 341-360.

"On Changing the Consumer Price Index, A Comment," *Journal of Policy Analysis and Management*, Vol. 1 (Summer 1982), pp. 512-15.

"The Political Feasibility of Regulatory Reform: How Did We Do It?" *Reforming Social Regulation: Alternative Public Policy Strategies*, Leroy Graymer and Frederick Thompson (eds.), Sage Publications, 1982.

"The Reform of Government Regulation: Recent Progress in the United States," University of Leuven Press, Leuven, Belgium, 1981.

"The New Merger Wave," *N/E/R/A Topics*, National Economic Research Associates, December 1981.

"Liberals Must Face Facts," *Challenge*, Nov/Dec. 1981, pp. 25-32.

"Is Inflation Abating?" *N/E/R/A Topics*, National Economic Research Associates, November 1981.

"Utility Regulation Revisited," National Economic Research Associates: New York, 1981, republished in *Current Issues in Public Utility Economics: Essays in Honor of James C. Bonbright*, Albert L. Danielson and David R. Kamerschen (eds.), Lexington, MA., D.C. Heath and Company, 1983.

"Must We Live With Inflation Through the 1980s?" *Major Issues of the 1980s Lecture Series*. Sponsored jointly by the Lowell Institute of Boston and Harvard University Extension, April 1981.

"Ethical Values in a Market System," *Across the Board*, The Conference Board, April 1981, pp. 57-63.

"Can Liberalism Survive Inflation?" *The Economist*, March 7, 1981, pp. 21-25.

"Health Care Economics: Paths to Structural Reform," in Mancur Olson (ed.), *A New Approach to the Economics of Health Care*, Washington, American Enterprise Institute, 1981.

"Regulation and the Imagination," *Proceedings of a Regulatory Council Conference*, United States Regulatory Council, July 22, 1980, pp. 1-9.

"Health Care and Inflation: Social Compassion and Efficient Choice," *National Journal*, August 2, 1980, pp. 1294-97.

"A Paean to Legal Creativity" (with Michael Roach), *Administrative Law Review*, Washington, D.C., Winter 1979, Volume 31, No. 1, pp. 97-114.

"Applications of Economics to an Imperfect World," *Regulation*, Washington, D.C., November/December 1978, Volume 2, No. 6, pp. 17-27; The Richard T. Ely lecture, *The American Economic Review, Papers and Proceedings*, Volume 69, No. 2, May 1979, pp. 1-13.

"The Changing Environment of International Air Commerce," *Air Law*, (Netherlands Journal), Volume 3, No. 3, 1978.

"Deregulation of Air Transportation--Getting from Here to There," *Regulating Business: The Search for an Optimum*, Institute for Contemporary Studies, San Francisco, California, 1978, pp. 37-63.

"Load Control, Resource Conservation and King Charles' Head," Iowa State University Regulatory Conference, *Proceedings*, May 19, 1977, pp. 68-74.

"Recent Developments in Cost Analysis and Rate Design," *Proceedings of the Third Annual Symposium on Problems of Regulated Industries*, Kansas City, Missouri, February 14, 1977, pp. 15-28.

"An Economist at Work on Utility Rate Regulation," a series of three articles, *Public Utilities Fortnightly*, Washington, D.C., January 5, 19, and February 2, 1978.

"New Rate Structures in Communications" (with Charles A. Zielinski), *Public Utilities Fortnightly*, March 25, 1976, pp. 19-24 and April 8, 1976, pp. 20-23.

"Efficient Rate Design: The Transition from Theory to Practice," *Proceedings of the Symposium on Rate Design Problems of Regulated Industries*, February 23-26, 1975, Kansas City, Missouri, pp. 34-51.

"Between Theory and Practice: Reflections of a Neophyte Public Utility Regulator," *Public Utilities Fortnightly*, January 2, 1975, pp. 3-7.

"Economic Theory as a Guideline for Government Intervention and Control: Comment," *Journal of Economic Issues*, Vol. VIII, No. 2, June 1974.

"Market Power Inflation: A Conceptual Framework," in *The Roots of Inflation*, Burt Franklin and Co., 1975.

"The Economics of the Electricity-Environmental Issue: A Primer," P.I.P. National Environmental Press Seminar, Minneapolis, Minnesota, May 31-June 1, 1972.

"Evaluation of Economic Regulation: Discussion," *Ibid*. LXI (May 1971) 235-237.

"National Communications Policy: Discussion," *The American Economic Review, Papers and Proceedings*, Volume 60, May 1970, pp. 219-20.

"Dual Pricing in Southern Louisiana: A Reply," *Land Economics*, XLVI (August 1970): 338-42.

"The Combined Effects of Prorationing, the Depletion Allowance and Import Quotas on the Cost of Producing Crude Oil in the United States," U.S. Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, 91st Congress, 1st Session, *Government Intervention in the Market Mechanism, Hearings, The Petroleum Industry*, Part 1, Washington, 1969, Reproduced in *Natural Resources Journal* (January 1970) X:53-61.

"Incentives to Superior Performance: Pricing," Harry Trebing (ed.), *Performance Under Regulation*, Michigan State University Press, 1968.

"The Graduated Fair Return," *The American Economic Review*, March 1968.

"Cartels and Trade Associations," *Encyclopedia of the Social Sciences*, 1968.

"The Merits of Reserving the Cost-Savings From Domestic Communications Satellites for Support of Educational Television" (with Joel B. Dirlam), *Yale Law Journal*, Volume 77, No. 3, January 1968, pp. 494-520.

"Tyranny of Small Decisions: Market Failures, Imperfections, and the Limits of Economics," *Kyklos*, Volume 19, 1966.

"Mergers in the Petroleum Industry and Problems of the Independent Refiner," U.S. Senate Judiciary Committee, *Economic Concentration*, Part II, Washington, 1965, pp. 562-609.

"The Depletion Allowance in the Context of Cartelization," *The American Economic Review*, Volume 54, 1964, pp. 286-314.

"Efficiency in the Use of Natural Resources: Discussion," *The American Economic Review, Papers and Proceedings*, Volume 54, May 1964, pp. 221-226.

"Market Power and Economic Growth: Guides to Public Policy," *Antitrust Bulletin*, Volume 8, May-June 1962, p. 531.

"Agricultural Aid and Economic Development: The Case of Israel," *The Quarterly Journal of Economics*, Volume 76, November 1962, pp. 568-591.

"The Role of Patents," in J.P. Miller, ed., *Competition, Cartels and Their Regulation* (North Holland Publishing Company, Amsterdam), Chapter 8, pp. 308-346.

"The Chemical Industry," Walter Adams (ed.) *The Structure of the American Industry*, First, Second and Third Editions, New York, MacMillan, 1948, 1954 and 1961.

"Economic Issues in Regulating the Field Price of Natural Gas," *The American Economic Review, Papers and Proceedings*, Volume 50, May 1960, pp. 506-517.

"Pricing Objectives in Large Companies: Comment," *The American Economic Review*, Volume 49, September 1959, pp. 670-678.

"Selected Papers: A.E.A. Competition; Discussion," *The American Economic Review, Papers and Proceedings*, Volume 48, May 1958, pp. 600-602.

"Economic and Legal Approaches to Antitrust: An Attempt to Clarify the Issues," *Antitrust Bulletin*, Volume 2, January 1957, pp. 267-279.

"Report on Antitrust Policy: Discussion," *The American Economic Review, Papers and Proceedings*, Volume 46, May 1956, pp. 496-507.

"My Antitrust Philosophy: Evidence of Schizophrenia or Shattering Transformation?" *Antitrust Bulletin*, Volume 1, November 1955, p. 355.

"Regulation of Crude Oil Production in the United States and Lessons for Italy," *Banca Nazionale Del Lavoro Monthly Review*, Volume 8, June 1955, pp. 67-79.

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"The Integration and Dissolution of the A & P Company" (with Joel B. Dirlam), *Indiana Law Journal*, Volume 29, Fall 1953, pp. 1-27.

"Big Business in a Competitive Society" (with A.D.H. Kaplan), *Fortune*, Volume 47, Supp., February 1953.

"Leadership and Conflict in the Pricing of Gasoline" (with Joel B. Dirlam), *Yale Law Journal*, Volume 61, June-July 1952, pp. 818-855.

"Price Discrimination in Law and Economics" (with Joel B. Dirlam), *The American Journal of Economics and Sociology (Essays in Honor of Harry Gunnison Brown)*, Volume 11, April 1952, pp. 281-313.

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"Investment Criteria in Development Programs," *The Quarterly Journal of Economics*, Volume 65, February 1951, pp. 38-61.

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"Patent Policy: Discussion," *The American Economic Review, Papers and Proceedings*, Volume 38, May 1948, pp. 245-260.

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"Fundamental Deficiencies of American Patent Law," *The American Economic Review*, Volume 30, September 1940, pp. 475-491.

U.S. CONGRESSIONAL TESTIMONY:

Aviation Subcommittee of the House Committee on Public Works and Transportation on international aviation policy, May 9, 1991.

Subcommittee on Aviation of the Senate Committee on Commerce, Science and Transportation on airline concentration at hub airports, September 22, 1988.

Subcommittee on Aviation of the Senate Committee on Commerce, Science and Transportation on airline safety and re-regulation, November 4, 1987.

Subcommittee on Telecommunications and Finance, House Committee on Energy and Commerce, on competition and deregulation of the telecommunications industry, July 15, 1987.

Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, on competitive issues in the airline industry, March 25, 1987.

Subcommittee on Monopolies and Commercial Law, Committee on the Judiciary, U.S. House of Representatives, on the Administration's proposed amendments to Section 7 of the Clayton Act, February 26, 1986.

Subcommittee on Aviation of the Senate Committee on Commerce, Science and Transportation on Computerized Reservation Systems, March 19, 1985.

Joint Economic Committee, United States Senate, Hearing on the Economic Issues of a Changing Telecommunications Industry, October 3, 1983.

House Subcommittee on Aviation on "Competitive Problems Raised by Computerized Reservation Systems," June 22, 1983.

House Committee on the Judiciary, on H.R. 1878, "The Shipping Act of 1983," May 19, 1983.

House Committee on Public Works and Transportation on "Coal Slurry Pipelines," April 13, 1983.

House Committee on the Judiciary, on H.J. Res. 350, A Plan to Balance the Federal Budget, August 4, 1982.

Senate Committee on the Judiciary, on S. 1215, the Malt Beverage Competition Act, June 21, 1982.

Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, "Development, Operation and Implementation of the United States International Aviation Policy," December 9, 1981.

Joint Economic Committee, U.S. Congress on "Trucking Regulation," November 17, 1981.
Subcommittee on Monopolies and Commercial Law, House Committee on the Judiciary, "Mergers," August 26, 1981.

Senate Committee on Commerce, Science and Transportation, on S. 898, "The Telecommunications Act of 1981," June 11, 1981.

Subcommittee on Telecommunications, Consumer Protection, and Finance, House Committee on Energy and Commerce, "Telecommunications Regulation," May 20, 1981.

Subcommittee on Health, Senate Committee on Finance, on "The Health Incentives Reform Act," March 19, 1980.

House Budget Committee Inflation Task Force, on the "Treatment of Housing Costs in the Consumer Price Index," January 24, 1980.

Senate Committee on Banking, Housing, and Urban Affairs, on "The Chrysler Loan Guarantee Act," November 15, 1979.

Subcommittee on Surface Transportation, House Committee on Public Works and Transportation, on "Trucking Deregulation," October 4, 1979.

Senate Committee on Commerce, Science, and Transportation, on "Trucking Deregulation," June 26, 1979.

Subcommittee on the Legislative Process, House Rules Committee, on "Sunset Legislation," May 23, 1979.

Testimony on food prices and inflation, before:

a) House Subcommittee on Domestic Marketing, Consumer Relations and Nutrition; and Subcommittee on Department Investigations, Oversight and Research, Committee on Agriculture, April 4, 1979.

b) Subcommittee on Antitrust and Monopoly, Senate Committee on the Judiciary, April 6, 1979.

Testimony on hospital cost containment legislation, before:

a) Subcommittee on Health and the Environment, House Interstate and Foreign Commerce Committee; and Subcommittee on Health, House Ways and Means Committee, March 12, 1979.

b) Health Subcommittee, Senate Finance Committee, March 13, 1979.

Subcommittee on Environmental Pollution, Senate Committee on Environment and Public Works, on "Environmental Regulation and Inflation," February 27, 1979.

Testimony on authorization and appropriations for the Council on Wage and Price Stability, before:

a) Subcommittee on Economic Stabilization, House Committee on Banking, Finance and Urban Affairs, February 6, 1979.

b) Senate Subcommittee on Commerce, Consumer and Monetary Affairs, February 7, 1979.

c) Senate Committee on Banking, Housing and Urban Affairs, February 9, 1979.

d) Subcommittee on Treasury, Postal Service, and General Government, House Committee on Appropriations, May 24, 1979.

e) House Appropriations Committee, February 6, 1980.

f) Senate Committee on Banking, Housing, and Urban Affairs, March 17, 1980.

g) Subcommittee on Treasury, Postal Service, and General Government, House Committee on Appropriations, March 31, 1980.

h) Senate Committee on Banking, Housing and Urban Affairs, April 21, 1980.

i) Subcommittee on Treasury, Postal Service, and General Government, Senate Committee on Appropriations, April 23, 1980.

j) Subcommittee on Economic Stabilization, House Banking Committee, May 6, 1980.

House Committee on Ways and Means, on "Real Wage Insurance," January 30, 1979.

Testimony on the President's anti-inflation program, before:

a) Subcommittee on Economic Stabilization, House Committee on Banking, Currency, and Housing. November 22, 1978.

b) Subcommittee on Economic Growth and Stabilization, Joint Economic Committee, December 6, 1978.

c) House Committee on the Budget, January 30, 1979.

d) Subcommittee on Treasury, Postal Services, and General Government, House Committee on Appropriations, February 14, 1979.

e) Senate Budget Committee, March 7, 1979.

f) Subcommittee on Commerce, Consumer and Monetary Affairs, House Committee on Government Operations, June 28, 1979.

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1970-1992	Lecturer and Coordinator, Management Development Program, Corning Glass Works, Corning, New York
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"Responsible Regulation of Return on Equity," Finance Division Annual Meeting of the Edison Electric Institute, May 12, 1977, New York.

"Is There Any Place in Natural Gas Regulation for Economics?" Southwest Economic Association, Dallas, Texas, March 31, 1977.

"The Electric Utility Rate Reform and Regulation Improvement Act," Hearings before the Subcommittee on Energy and Power and the Committee on Interstate and Foreign Commerce, April 7, 1976.

"The Power Facilities Construction Act of 1975," Hearings before the Tax Expenditure Task Force of the U.S. House Budget Committee, February 24, 1976.

"Financing the Electric Utility Industry: The Real Solution," Electric Utility Financial Problems and Potential Solutions Workshop, Mitre Corporation (NSF), Washington, D.C., September 26, 1975.

"Future Capital Needs of the U.S. Energy Industry," Hearings before the Subcommittee on Government Regulation of the Select Committee on Small Business, United States Senate, August 7, 1974.

TESTIMONY BEFORE REGULATORY AGENCIES:

September, 1996	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the Company's cost of equity capital (supplemental).
August, 1996	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the Company's cost of equity capital.
April, 1996	State of Alaska, Department of Revenue, "Report of Professor Jerome E. Hass," regarding certain income tax issues (confidential).
February, 1996	State of Alaska, Department of Revenue, "Report of Professor Jerome E. Hass," regarding certain income tax issues (confidential).
January, 1996	Federal Energy Regulatory Commission on behalf of Refinery Holding Company, Chevron USA Products Company and the Estate of El Paso Refinery, L.P. regarding various tariff issues for Santa Fe Pipeline Partners (sur-surrebuttal).
December, 1995	Federal Energy Regulatory Commission on behalf of Liquid Energy Corporation and Enserch Processing Company regarding various tariff issues for Chevron Pipe Line Company (LPGS) (surrebuttal).
August, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company, Chevron USA Products Company and the Estate of El Paso Refinery, L.P. regarding various tariff issues for Santa Fe Pipeline Partners (rebuttal).
June, 1995	Federal Energy Regulatory Commission on behalf of Liquid Energy Corporation and Enserch Processing Company regarding various tariff issues for Chevron Pipe Line Company (LPGS).
June, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company regarding various tariff issues for Chevron Pipe Line Company (APS) (surrebuttal).

May, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company regarding various tariff issues for Chevron Pipe Line Company (APS) (supplemental).
March, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company regarding various tariff issues for Chevron Pipe Line Company (APS).
December, 1994	New Jersey Board of Public Utilities on behalf of Comcast (multiple) regarding the cost of capital.
November, 1994	Connecticut Department of Public Utility Control on behalf of Comcast Cablevision regarding the cost of capital (Affidavit).
November, 1994	New Jersey Board of Public Utilities on behalf of Garden State Cablevision regarding the cost of capital.
June, 1994	Federal Energy Regulatory Commission on behalf of Refinery Holding Company, Chevron USA Products Company and the Estate of El Paso Refinery, L.P. regarding various tariff issues for Santa Fe Pipeline Partners.
December, 1993	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
December, 1992	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
December, 1991	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
January, 1991	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Rochester Gas & Electric.
February, 1990	Illinois Commerce Commission on behalf of Illinois Power Company regarding the cost of common equity and the proper capital structure to use in ratemaking.
February, 1990	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Rochester Gas & Electric.
November, 1989	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Central Hudson Gas & Electric Corporation.

October, 1989	Federal Energy Regulatory Commission on behalf of the State of Alaska regarding the proper capital structure and rates of return on debt and equity for the Endicott Pipeline Company.
April, 1989	Federal Energy Regulatory Commission on behalf of Air Transport Association of America regarding the profitability of Buckeye Pipe Line Company, L.P., and the ability of the Commission to rely upon market forces in place of active regulation.
October, 1988	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Central Hudson Gas & Electric Corporation.
March, 1988	Illinois Commerce Commission on behalf of Illinois Power Company regarding the cost of common equity.
June, 1987	South Dakota Public Utilities Commission on behalf of Otter Tail Power Company regarding the cost of common equity.
March, 1987	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity to the company under different Shoreham and Nine Mile Point II status scenarios.
November, 1986	Minnesota Public Utilities Commission on behalf of Otter Tail Power Company regarding the cost of common equity.
November, 1986	Federal Energy Regulatory Commission on behalf of the State of Alaska regarding the proper capital structure and rates of return on debt and equity for the Kuparuk Transportation Company.
August, 1985	California Public Utilities Commission on behalf of Pacific Gas & Electric Company regarding the costs and benefits to customers from different interim tariffs for the Diablo Canyon plant.
February, 1985	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity to the company under different Shoreham status scenarios.
January, 1985	Illinois Commerce Commission on behalf of Illinois Power Company regarding the cost of common equity and the effects on the costs of capital of phasing construction work-in-progress in rate base.
November, 1984	Maine Public Utilities Commission on behalf of Central Maine Power Company regarding the cost of common equity.
October, 1984	Arizona Corporation Commission on behalf of Arizona Public Service regarding an operating incentive system for the Company's base load units.

February, 1984	Arizona Corporation Commission on behalf of Arizona Public Service regarding the use of incentive systems for electric utilities.
January, 1984	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
January, 1984	Federal Energy Regulatory Commission on behalf of the State of Alaska and the Department of Justice on the methodology of setting tariffs for the Trans-Alaska Oil Pipeline.
December, 1983	Department of Public Utility Control on behalf of United Cable Television of Connecticut regarding proper ratemaking and cost of equity.
May, 1983	Illinois Commerce Commission on behalf of Illinois Power Company regarding customers' costs and benefits from permitting construction work in progress in rate base.
1981-1983	Public Service Commissions in Minnesota, North Dakota and South Dakota and the Federal Energy Regulatory Commission on behalf of Otter Tail Power Company regarding the cost of common equity.
March, 1979	Testimony before the Philadelphia Gas Commission relating to proper practices for service termination, billing, and other customer-related activities of the Philadelphia Gas Works.
September, 1976	Before the Federal Power Commission on behalf of the Commission Staff regarding the determination of the fair market value and net salvage value of a pipeline proposed to be abandoned from gas transmission service.

TESTIMONY BEFORE COURTS:

June, 1994	Long Island Lighting Company v. The Assessor and the Board of Assessment for the Town of Brookhaven, et al. Supreme Court of the State of New York, County of Suffolk. Testified regarding the maximum economic values and present conditions of the Shoreham Nuclear Power Station for the years 1984 through 1991.
June, 1992	Niagara Mohawk Power Corporation et al. v. Stone & Webster Engineering Corporation, et al. United States District Court for the Northern District of New York. Testified regarding the reasonableness of financing costs incurred by plaintiffs associated with repairs to the Nine Mile Point 2 nuclear power plant.
August, 1990	Long Island Lighting Company v. The Assessor and the Board of Assessment for the Town of Brookhaven, et al, Supreme Court of the State

	of New York, County of Suffolk. Testified regarding the maximum economic values and present conditions of the Shoreham Nuclear Power Station for the years 1976 through 1983.
November, 1989	Continental Airlines, et al. v. American Airlines, et al. U.S. District Court (Central District of California). Testified regarding the reasonableness of the rate of return earned by American Airlines on its computerized reservation system investment.
February, 1989	ETSI Pipeline Project, et al. v. Burlington Northern, et al. U.S. District Court (Eastern District of Texas). Gave oral expert testimony regarding the determination of damages to Houston Light & Power customers arising from the actions of railroads which forced cancellation of the ETSI project, a coal slurry pipeline.
October, 1987	Shamrock Associates v. Horizon Corporation et al. U.S. District Court (Southern District of New York). Gave oral expert testimony regarding fairness of two security transactions between Horizon Corporation and MCO Holdings and provided estimates of damages to Horizon therefrom.
July, 1984	Exxon Corporation v. The United States, U.S. Claims Court. Filed expert report and testified on behalf of Exxon regarding valuation of refining and marketing assets seized in Cuba.
April, 1984	State of Alaska v. Phillips Petroleum Company, Alaska District Court. Filed expert report on behalf of State in royalty litigation regarding the value of natural gas produced in Cook Inlet for liquification and sale to Japan.
February, 1982	Carl F. Matzen, et al v. Cities Service Oil Company, et al. Testified on behalf of producers in royalty litigation regarding value of natural gas sold in interstate commerce.

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